

Zero Retries issue 0019 2021-11-19

Advanced Amateur Radio - Data Communications; Space; Microwave... the fun stuff! Nothing great has ever been accomplished without irrational exuberance - Tom Evslin. Irrational exuberance is pretty much the business model of Zero Retries Newsletter - Steve Stroh N8GNJ. The Universal Purpose of Ham Radio is to have fun messing around with radios - Bob Witte K0NR. We are confronted by insurmountable opportunities! - Pogo. Ultimately, amateur radio must prove that it is useful for society - Dr. Karl Meinzer DJ4ZC.

Steve Stroh N8GNJ, Editor

Jack Stroh, Late Night Assistant Editor

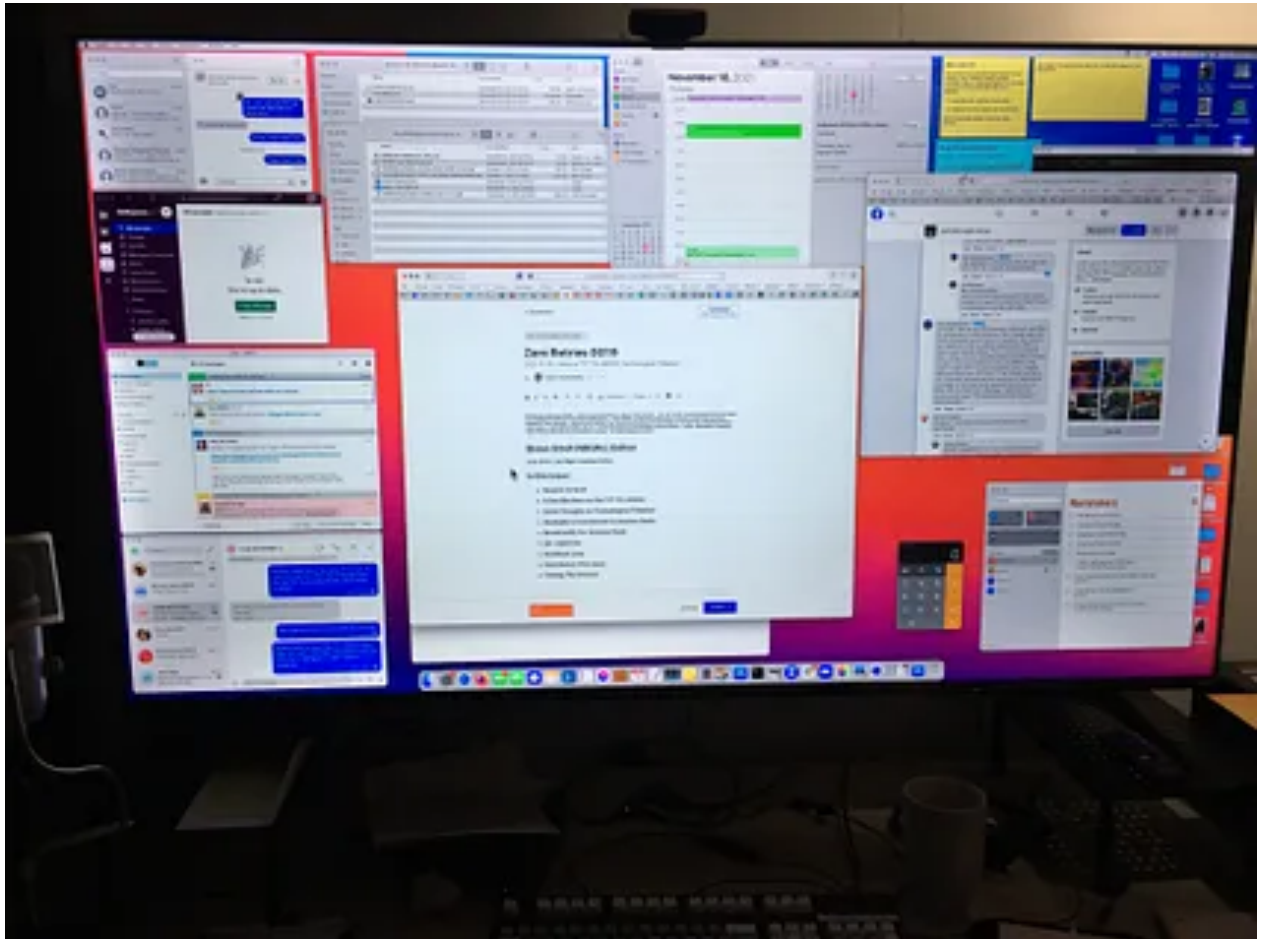
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Request to Send

The *Big Monitor*

As I worked on this issue of Zero Retries, my office was more of a mess than usual because I pushed nearly everything aside to set up the new [65" Hisense 4k television](#) that is now the primary display for my Mac Mini. I purchased this unit (\$509 + tax when I bought it, but as I just checked, it's currently \$499) from Costco. In my opinion, Costco's secret weapon for being one of the primary sellers of televisions is an amazing no-hassle return policy up to 30 days from date of purchase. Thus I wanted to set up the 65" television within that window and see if it would work acceptably with my Mac Mini. I was able to wrestle it out of the box by myself, but just barely. I have a wide arm span, and this television used all of it. Summary - it works (well enough) for me, and I'll be keeping it.



Although all modern Macs *will* drive multiple monitors, my experience is that they don't do it very well, at least the way *I* want to use multiple monitors. One monitor I tried to use was a nice one that rotates 90° so I had the equivalent of a 8 1/2" x 11 sheet of paper... but the Mac Mini insisted on booting to that display (despite having set the other display as "Primary"), *and* ignoring my preference that it was rotated 90°. The result was that whenever I had to reboot the Mac, it couldn't display the login screen correctly. I ended up considering that monitor unusable, despite how useful it was. Another annoyance on multiple displays was that apps and windows I had sized and parked on the multiple displays would get randomly reset on boot ups. A quote from the late [Byte columnist Jerry Pournelle](#) came to mind: "Doing something on a Mac is either ridiculously easy and obvious... or it's impossible." Yep.

The real trick to achieving what I wanted from this television (lots of desktop real estate for multiple windows) was going into the Mac Mini's Display settings and selecting "Scaled" and then selecting the "More Space" option. I also adjusted the television itself for "Computer" and then everything *popped*. I'm able to display easily 12 or so individual windows, including four browser windows. It fills my entire field of view and with a slight turn of my head I can easily reference windows that on my small display I had to page back and forth. No more - when I need to reference something while writing, they'll be side by side now. The fonts are a bit rough especially in browser apps like Substack but it will do, and again, for \$509, this was a very good deal. I'll revisit this issue in a few years when we have "8k" televisions for this price.

I was worried that perhaps I would have to connect this television to the Internet so that it could "phone home". Apparently, Visio makes [twice the profit from advertising](#) and other forms of "man

in the middle” services than they make manufacturing and selling the televisions. Fortunately this Hisense television gave me no grief at all not having Internet connected to it. Minor issues I’ve identified to date:

- In selecting the television as an audio source, the Mac Mini reports *The selected device has no output controls*. Which means that the only way to adjust the volume on the television is to use the television’s remote control, not the familiar Mac keyboard controls for Volume Up, Volume Down, and Mute.
- When I turn on the television, I have to confirm that I want “Computer” displayed, rather than it just displaying the input I last selected. It’s a manual process of three or so clicks on the television’s remote control.
- When I last rebooted the Mac Mini, it reverted to the non-scaled option in Display, and to restore my preferred (lots of screen real estate) layout, I had to change it back to Scaled, More Space.

...

Zero Retries now has 165+ subscribers. That’s just cool. Posting on Twitter provides more exposure than even word of mouth. I knew Twitter was useful, but wow...

A Few Bits More on the TYT TH-9000D

Orv Beach W6BI posted my article in Zero Retries 0018 - **TYT TH 9000D Monoband Radios Can Be Modified for Data** to the [VARA-MODEM mailing list](#). It made sense to do so as VARA FM Wide - Level 13 at 25 kbps is the fastest data communications over VHF / UHF that we can do at the moment (since no one - that I know of - has revived the [WA4DSY 56 kbps modem / radio](#)), and the key limiting factor is radios that are capable of VARA FM Wide. I’d rather not “spam” such lists with Zero Retries content to avoid being criticized as self-serving, but I’m delighted that W6BI chose to do so. W6BI’s posting kicked off some interesting discussion including from Kevin Custer W3KKC of Masters Communications, the creator of the DRA series of audio adapters that many VARA FM (Wide) users prefer. W3KKC wrote:

Since the heatsink on this radio looks familiar to the Alinco single banders, I'd prefer that people use the Alinco-6 adapter instead of the DRA DIN-6 adapter. The Alinco-6 adapter was slimmed down to fit without trimming and filing and shortened up to help prevent the cable from putting more stress on the mating connectors. Additionally - the heatsink may be machined for Metric hardware and may require Metric jack screws to be used to install the DB9 (DE9) female. The Alinco-6 adapter is supplied with both SAE and Metric screws so you wouldn't need to source them additionally if you purchased the Alinco-6 adapter.

That was a good catch - I meant to recommend the Model Alinco-6 adapter. I fixed the incorrect reference on the web version of Zero Retries 0018.

One other thing you may want to mention is options for the mounting hardware for the connector. I see that common screws are reused in the article. A better way to install a D-SUB female connector is with "jack screws". This is so the mating connector can be properly secured - preventing the connection from being accidentally pulled off. The

screws I provide assume that jack screws were installed. They are the correct length for this type of application.

If there's interest - I suppose I could make a kit that includes all of the necessary stuff to do it properly.

W3KKC was asked if adding this connector provided flat audio for use with VARA FM Wide, 9600 bps packet radio, etc.

Unfortunately, without knowing the specifics behind the type of audio that's available at that connector - from this radio, I cannot advise at this time. I have, however, just purchased a used TYT TH9000 VHF and when it comes, I'll do the suggested upgrade and test it accordingly. Then - I'll know for sure what its throughput capabilities are and which interface to recommend.

Another thing to pay attention to with this "type" of radio is ... its TX audio input. It would appear that transmit audio, fed at that plug-in connector, is pre-emphasized and limited. This happens to the the case with the "newer" Alinco DR-X35MKIII series as well. This change seems to have happened when Alinco switched manufacturing from Japan to China a few (several?) years ago. This is also why some (older) Alinco single band mobile radios have D-SUB "standard" 4-40 hardware and the newer ones are Metric.

The TYT looks so similar to the Alinco. Maybe they are made in the same factory? Does anyone know?

The TYT radios may be like the newer Alinco DR-X35 MKIII where the "1200" baud TX input is the only one that works correctly. Fortunately - this input works for speeds much faster than 1200 baud, and seem to fully support VARA FM Wide. It's also worth noting that this input on the Alinco is pre-emphasized and limited, but its frequency response extends to 4800 Hz, making it capable of VARA FM Wide Level 13. Feeding this input results in severe tilt (twist) of the audio spectrum because of the pre-emphasis. What people are doing to get the highest throughput is purposely over-driving the input which tends to flatten all of the signal frequencies because of the limiter. In my opinion - this is a terrible way to achieve the highest throughput - but it works. Some are saying they have better throughput with a DRA with amplification, presumably because of the increased audio level available to put the radio into limiting.

Yes - The Alinco-6 adapter is designed correctly to feed both modulator inputs. Which one is selectable by the 1200/9600 TX Baud header on the Alinco-6 adapter board. Whether or not that header needs to be placed in either position is determined by the vintage of the radio. The adapter works with all vintages, and whether you'll use 1200 or 9600 is dependent upon the radio that's connected. Remember - in the case of the newer Alinco radios, the 1200 baud TX setting doesn't necessarily mean slower connection speeds.

As always... YMMV - Especially since this radio has gone through changes in the way it operates.

In response to a report of early failure (just after a year of use), W3KKC wrote:

I know of many (certainly 10's maybe more) of these radios that are used in repeater service. People were having some failures when using cheaper switching supplies with

poor surge and impulse protection. That's certainly not the case with your linear technology Astron. While I haven't heard of or saw the percentage of failure you have, they are inexpensive radios and you commonly get what you pay for.

I don't advise anyone to be going out and buying these until I find out for sure what the nature of the audio is that's available. Just because it works for voice doesn't mean it'll work for wide-band digital. Sure, any radio will "work" but the speed capability is directly related to the type of audio the radio makes available to the interface. I should know for sure in a few weeks - if not sooner. Then - Steve can properly advise from his article, or make a new one for this application.

I've read that one aspect of radios manufactured in China, especially radios that aren't made by / for a "name brand", the specifications can change without notice, so Kevin's used version may not be the same as units being sold now.

All that said, I'm jazzed that my article instigated this discussion and tweaked W3KKC's curiosity about it and his potential offer to create a solid kit for "easier" modification of the TYT TH-9000D for data use.

Again, my thanks to Andy Saylor KF7VOL for mentioning the TYT TH-9000D's potential for data use.

Field Report on the Yaesu FTM 6000R for High Speed Data

On the [VARA-MODEM mailing list](#), Dennis Mojado AD6DM reported:

I am happy to report that the 9600bps port on the back of the new Yaesu FTM-6000R works great for VARA FM Wide using a Masters Communications DRA-50 sound card. Of course, I needed to buy the CT-164 10-pin to Mini DIN 6 adapter cable. This makes a great way to have a dual-band high-speed VARA FM rig, instead of relying only on monoband VHF or UHF rigs for their 9600 ports.

Just wanted to share for those who are searching for a VARA FM *Wide* rig and are finding that Alincos are in short supply.

Gregory Colson KM5VC echoed AD6DM's results.

Looks like we have a viable new radio for higher speed data in the Yaesu FTM 6000R!

Some Thoughts on Technological Tribalism

In Zero Retries 0018, Todd Torborg KA2DEW offered some feedback about the NinoTNC that he helped develop for use in the [TAPRN Network](#). The TAPRN approach is well-established in North Carolina and a [few other TAPRN networks](#) have started in other areas.

That triggered a mental exercise about how Amateur Radio data communications has become... kind of tribal. As in we use the hardware that the rest of our tribe uses, like how Packet Radio users in North Carolina are probably mostly using TAPRN networking, especially NinoTNCs, because TAPRN and the NinoTNC are well-supported there. Many other examples came to mind:

- In Whatcom County Washington, we're using a lot of [Nexus DR-X](#) units because that's what is best supported by the "tribe" here.
- In the San Juan Islands Washington, they're using a lot of [DRAWS](#) units for packet radio, because that's what's best supported by the "tribe" there. (NW Digital Radio is based in Friday Harbor, Washington.)
- [HamWAN](#) was started in the Seattle, Washington metro area (the Puget Sound Data Ring) and it has expanded to coverage of much of Western Washington. [Oregon HamWAN](#) is a project to create a new HamWAN network in the Portland, Oregon metro area, which will (hopefully) interconnect with the Puget Sound Data Ring. There are [some other HamWAN networks](#) in other areas of the US.
- I've read anecdotal stories of other areas that prefer specific devices such as [Kantronics KPC-3 / KPC-3+ TNCs](#) to use for 1200 bps packet radio because "that's what everyone else uses".
- I've also read anecdotal stories about areas that have begun to migrate away from packet radio in favor of increased use of Winlink Radio Mail Servers (RMS) (standalone, not linked to Internet) and using VARA FM instead of packet radio to connect between RMS'.

I became interested in Amateur Radio and got my Tech license in 1985 only because of the emergence of Packet Radio as popularized by TAPR. (Yes, there was Packet Radio prior to TAPR, but I wasn't aware of those earlier efforts.) What was different in that era, versus now, is that the evolution of Packet Radio (generally) happened on a national basis. Generally, as we built out our local, and regional Packet Radio Networks, we all followed along what was happening in the rest of the country through a few key publications such as ARRL's Gateway newsletter, the TAPR Packet Status Register, and for a time, Packet Radio Magazine. The real bleeding edge stuff was discussed annually at the ARRL and TAPR Digital Communications Conference that "cross-fertilized" the US and occasionally Canada by rotating the DCC from East, Midwest, and West (twice in Seattle - 1993 and 2013) regions of North America.

Yes, there was some regional experimentation. In the Seattle, Washington area, we built a network that included 9600 bps bit-regenerative repeaters to use TCP/IP over packet radio. In Atlanta, Georgia and Vancouver, British Columbia and Ottawa, Ontario there were multiple [WA4DSY 56 kbps](#) repeaters. In Texas, there was TEXNET. In New Jersey there was the ROSE Network. There was a network using X1J4 in Georgia (SEDAN?). I remember Hamilton Area [Ontario] Packet Network (HAPN) that used a unique 4800 bps packet radio modem. And many other interesting variants of Amateur Radio Data Communications.

The difference between then, and now, is that those of us who were curious enough to be TAPR members and received the PSR could easily be informed. We would read about all those experiments because the experimenters wrote articles about them for the PSR, and the rest of us eagerly read those articles and followed along with their progress.

But now, there's very little of that sharing of information between areas about the various Amateur Radio data communications technologies that we're experimenting with and implementing. We're tribal now. That's ironic given that we're two decades into the "Internet revolution" which enables us to share unlimited information worldwide at essentially no cost. *Something* is broken when we had more of a sense of shared knowledge when we were forced to use paper newsletters, magazines and books transported via expensive postal service versus practically free ubiquitous Internet.

What *was* it that “broke” between then, and now? Why now with the Internet, we *don't* have a sense of shared evolution about Amateur Radio data communications?

One thing I can point to (and in doing so, I'm not assigning blame) is that the organization that was “Tucson Amateur Packet Radio” became “TAPR” as it evolved beyond a focus on Packet Radio. Over the years, TAPR's newsletter the Packet Status Register (PSR) featured less and less Packet Radio content, especially Packet Radio Networking. Similarly, there were fewer papers presented about Packet Radio and Packet Radio Networking at the annual ARRL and TAPR Digital Communications Conference (DCC). With that change of focus by TAPR and the DCC, us Amateur Radio Data Communications experimenters and users started drifting apart in how we chose to do Data Communications in Amateur Radio.

Maybe this growing diversity of approaches is a good thing. There's certainly some interesting innovation going on. But without that “energy” and “larger than local” sense of shared technical evolution, it feels, to me, like we've devolved somewhat into localized tribes of somewhat incompatible technology. In the sense of networking, that's probably not much of an issue. Even at the peak of our energy and activity in Packet Radio, when “most” (?) Amateur Radio Operators at least dabbled in Packet Radio, we never had much hope of scaling our networks to much more than regional coverage at best.

But with that divergence of technologies, it's harder to attract new people, especially young techies, into Amateur Radio on the basis of data communications. You *can* make the case that “slow data” isn't “totally useless”... but how do you start to explain the fragmentation (worst case description) or diversity (best case description) between approaches like commercial TNCs sold at Ham Radio Outlet, the NW Digital Radio DRAWS, the Nexus DR-X, the NinoTNC, Winlink using VARA FM, fldigi, etc.? Understood that there's no one “best” system... but perhaps we should have at least one technology in common that any new ham can start with no matter what “tribe” they happen to be located near?

I don't have an answer, but it seems reasonable to ask the question. I'd certainly welcome some comments and feedback.

FlexRadio's Commitment to Amateur Radio

In doing research for the Bellingham Makerspace Amateur Radio Group, one of the items we hope to equip the BMARG space with is a [FlexRadio Maestro control console](#) and (remoted) a [FlexRadio 6400 transceiver](#).

As with many, many things these days, supply chain issues have impacted FlexRadio on the production of the Maestro, specifically the big, bright, beautiful Liquid Crystal Display (LCD). Thus, FlexRadio doesn't expect to be able to resume production of the Maestro until 2022-2H. But, [in that mea culpa was this remarkable statement](#):

Throughout the [US Government] project, FlexRadio has been asked about our ongoing business and we have continued to inform all of our customers that the Amateur Radio business is strategic for both FlexRadio as well as the long-term benefits to the radio art and communications community. Specifically, FlexRadio has repeatedly asserted that we believe that continuing to invest in Amateur Radio is an investment in the future of communications. There is not a corner of the communications world that FlexRadio has been involved in that we do not see Amateurs making key contributions.

I find that statement to be *remarkable!* Not because it's a revelation. Just in the last decade there are hundreds, probably thousands, of companies, inventions, and technologies that were quietly (and sometimes overtly, like FlexRadio) founded upon innovations that first appeared in Amateur Radio. The very smartest companies involved in wireless technology *know that to be true*, and at least quietly embrace that truth, including having as many Amateur Radio operators on staff as possible.

No, what I find remarkable in FlexRadio's statement is that they had the courage of this conviction to push back against a huge, profitable customer's pressure to devote *all* resources exclusively to that project to the detriment of this core tenet. FlexRadio simply said No, we're not going to abandon the wellspring of innovation and experimentation that is our work for Amateur Radio. We'll defer Amateur Radio development for a bit, *but not abandon it*.

Kudos, FlexRadio!

Broadcastify For Amateur Radio

[Broadcastify](#) is essentially a web-based "distributed" radio scanner. As soon as you click the link, you'll get the idea. I got the bright idea to perhaps play a Broadcastify stream for Amateur Radio in Whatcom County as part of the Amateur Radio "station" at the [Bellingham Makerspace](#). The reason is that we don't have any radio equipment there yet, but we'd like to provide some Amateur Radio "ambiance", and some squawking and squelch-tailing would make the older hams like me feel more at home.

Well, I was right about the concept, and [there are such feeds elsewhere in Washington](#), but none here in Whatcom County. That looks fixable - [Becoming a Feed Provider](#), but there's a lot to unpack. There are feed options for an audio upload from a scanner, there's a Raspberry Pi with software-defined receivers, etc. I think it's a worthy project to make Amateur Radio repeater traffic more accessible to prospective Amateur Radio operators via the web, but for now it's going to have to be another project on the list in N8GNJ Labs.

Yes, I know there are many options for listening in on the various Internet repeater networks, but I really like Broadcastify's simple model - browse, click, listen. Ease of discovery and use, such as what Broadcastify offers, is key for attracting interest from current generation techies that aren't steeped in Amateur Radio's arcane Voice Over Internet Protocol (VOIP) networks.

FaradayRF Lives On in the Internet Archive

FaradayRF came and went quickly (approximately 2016 - 2019), but it was a remarkable little company founded by two talented brothers - Brenton Salmi KB1LQD and Bryce Salmi KB1LQC. FaradayRF could have made a big difference in Amateur Radio by creating a modern data radio for reasonable speeds for the 902-928 MHz band in the US that's shared between multiple uses, including Amateur Radio. Their website - [faradayrf.com](#) is now offline, but the Internet Archive's Wayback Machine [preserved it](#). **Update** - Apparently FaradayRF's [Facebook page](#), [Twitter page](#), and most importantly, [GitHub page](#) all remain online.

Faraday Radio had *so much right*:

Data Is The Future

We believe data is the future of amateur radio. Data is data whether it's voice, telemetry, messages, or another piece of information. In order for ham radio to remain relevant it must adapt to the needs of the coming generation of experimenters and hobbyists.

We've developed Faraday and all necessary code to provide the hardware and software necessary to enable the shift towards a data-centric amateur radio.

Faraday is an open digital radio that will enable radio amateurs to determine the future of ham radio.

Beyond ISM

Faraday is more than just another Industrial, Scientific, and Medical band transceiver (ISM). Faraday takes advantage of the ISM hardware which works on the amateur radio 33cm band to let us focus on the real tasks we want to accomplish. The FaradayRF Master Plan details these tasks of which providing a well documented and educational digital wireless ham radio platform enabling an infrastructure to be built from is among the first goals.

500mW at 915MHz packs the power necessary to traverse over 40km required by last-mile communications infrastructure. The on-board Antennova M10478-A2 GPS adds location aware applications out of the box without the need for additional hardware.

Overall, Faraday was designed to provide access to 33cm to radio amateurs and empower them to experiment and learn. A stronger ham radio is a more exciting ham radio.

Utilizing The 33cm Band

Faraday utilizes the 33cm amateur band which operates between the 902-928MHz frequency range. This means Faraday is currently only intended for use under FCC Part 97 with an amateur radio license in the United States. We explain the benefits of using the 33cm band more on our networking page but here are the main points.

- * Hardware for the GSM and ISM services is widely available and cheap
- * Propagation characteristics of the 33 cm band is similar to the GSM850 , basically what you would consider standard cell phone network coverage
- * The antenna sizes are ideal for low-cost installations and experimentation with the radios
- * Radio amateurs do not have easy access to 33 cm

*Thank You Internet Archive for this, and **many** other Amateur Radio "Saves" (like [73](#)).*

Amateur Radio really needs to find a way to nurture such innovation. A pure commercial, for-profit approach for creating Amateur Radio devices and systems only works for the lowest common denominator devices or very high priced units (like HF transceivers). Amateur Radio loses a lot when projects like FaradayRF don't make it.

ZR > BEACON

- **K4ABT - Silent Keyboard** - [Per CQ Amateur Radio](#):

We have learned that former CQ Packet Editor and author Glynn "Buck" Rogers, K4ABT, became a Silent Key this past spring. Rogers was a pioneer in packet radio, writing CQ's "Packet User's Notebook" column from 1988 to 2000 and authoring CQ's "Packet Radio Operator's Manual," which was published in 1993. A longtime resident of Lynchburg, Virginia, Rogers passed away April 29 at age 83.

Godspeed and Godbless K4ABT! You taught us a lot! You will be missed.

- **TAPR Packet Status Register (PSR) Newsletter Issue 150** - Autumn 2021 is [now online](#). The recent TAPR Directors elections were discussed, along with a number of other interesting articles.
- **TM-V71A** As of this week at least, the Kenwood TM-V71A that's widely used for Amateur Radio VHF / UHF data communications is [available from Main Trading Company](#) for \$395 with no shipping fee.
- **CQ-DATV Archive** Another Amateur Radio periodical that is no longer publishing is [CQ-DATV](#), which ceased publication at Issue 100 in October, 2021. DATV is Digital Amateur (Radio) Television. The link is to an archive that offers the magazines in various formats including PDF, and can be downloaded. I see the same kind of passion in CQ-DATV that I have for Zero Retries, and kudos to them for achieving 100 issues - that's a notable milestone.
- **Pacific Packet Radio Society (PPRS)** Speaking of archives, the [Pacific Packet Radio Society](#) has a rich set of archival material dating back literally to the beginning of Amateur Radio Packet Radio communications here in the US:
Wireless Digital Communication was introduced (in the United States) by Dr. Hank Magnuski (Co-founder PPRS), when his historic KA6M-1 Digital Packet Radio Repeater began operation on December 10, 1980.
 I'm *into* this stuff, and I haven't been able to completely read all of the material there.
- **High speed Ax25 network in Slovenia** This is yet another archive that's worth reading. It's remarkable that we had pockets of Amateur Radio [like what Dr. Matjaz Vidmar S53MV was able to accomplish](#) in Slovenia such as a 10 Mbps AX.25 TNC. The last update to these pages was in 2006... imagine what could be done with this kind of talent with the cheap compute power now available in the Raspberry Pi.
- **DJ4ZC New Deutscher Amateur Radio Club (DARC) Honorary Member** Once again I'm grateful to Jeff Davis for spotting something I wouldn't have otherwise seen. [DJ4ZC was awarded this richly deserved honor](#) for literally a lifetime of contributions to Amateur Radio, especially for Amateur Radio satellites. This quote in the article struck me, and is now part of the masthead of Zero Retries:
Ultimately, amateur radio must prove that it is useful for society.

Feedback Loop

- (The channel is open, but nothing heard.)

Contributors This Issue

My thanks to:

- **Kevin Custer W3KKC** for the discussion about the TYT TH-9000D radio on the VARA-MODEM list, much of which was excerpted in this issue.
- **Jeff Davis KE9V** (pseudostaffer) for alerting me to the CQ article about K4ABT's passing.

Closing The Channel

Zero Retries is on Twitter - [@zeroretries / Zero Retries Newsletter](#)

If you're not yet licensed as an Amateur Radio Operator, and would like to join the fun by *literally having a license to experiment with radio technology*, here are some pointers:

- **Ham Radio for Dummies** by Ward Silver N0AX is now in its [4th edition](#). N0AX is a gifted writer, and HRFD is a great overview of Amateur Radio.
- My favorite YouTube channel for a good overview of Amateur Radio, the one I recommend is **AmateurLogic.TV**. [These folks](#) just seem to have so much fun!
- Dan Romanchik KB6NU offers [free PDF versions](#) of his *great No-Nonsense Study Guides*.
- [HamExam.org Amateur Radio Practice Exams](#) offers good **Flash Card and Practice Exams**.
- When you're ready to take an **Amateur Radio examination** (Tech, General, or Extra), W1MX - The MIT Amateur Radio Society offers [remote exams](#), free for students and youngsters. *There are apparently many other remote exam options.*

And, *bonus* - with an Amateur Radio license, you'll be [more attractive on dates](#) 😊

If you're reading this issue on the web and you'd like to see it in your email Inbox every Friday afternoon, just click:

Subscribe now

If you're a fellow smart person that uses **RSS**, there *is* an RSS feed for Zero Retries.

Please tell your friends and co-conspirators about Zero Retries - just click:

Share Zero Retries

Offering feedback or comments for Zero Retries is equally easy - just click:

Leave a comment

Email issues of Zero Retries are “instrumented” by [Substack](#) to gather basic statistics about opens, clicking links, etc. I don't use such information in any way other than (in the absence of much feedback) getting some satisfaction that the data shows that people actually do read Zero Retries.

All previous issues of Zero Retries are available without restriction (no paywalls). For some background on Zero Retries, Issue 0000 was The Introduction Issue.

More bits from Steve Stroh N8GNJ:

- [SuperPacket blog](#) - *Discussing new generations of Amateur Radio Data Communications - beyond Packet Radio (a precursor to Zero Retries)*
- [N8GNJ blog](#) - *Amateur Radio Station N8GNJ and the mad science experiments at N8GNJ*

Labs - Bellingham, Washington, USA

(Both blogs are a bit neglected at the moment in favor of Zero Retries, but they'll be back soon with their own unique content. Subscribe via RSS!)

Thanks for reading!

Steve Stroh N8GNJ

Bellingham, Washington, USA

2021-11-19

If you'd like to reuse an article in this issue, for example for club or other newsletters, just ask.

Please provide credit for the content to me and any other authors.

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Below is a much more complete "footer" that has evolved over 30+ issues of ZR.

Join the *Fun* on Amateur Radio

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- My two favorite **YouTube** channels for a good overview of Amateur Radio are [AmateurLogic.TV](#). and [Ham Nation](#) (part of Ham Radio Crash Course). These folks just seem to have so much fun!
- [Radio Amateur Training Planning and Activities Committee \(RATPAC\)](#) offers weekly presentations on general Amateur Radio topics (Wednesdays) and emergency communications in Amateur Radio (Thursdays).
- Dan Romanchik KB6NU offers a free **No-Nonsense Study Guide** for the [Technician test](#) (PDF).
- [HamExam.org Amateur Radio Practice Exams](#) offers good **Flash Card and Practice Exams**.
- When you're ready to take an **Amateur Radio examination** (Tech, General, or Extra), W1MX - The MIT Amateur Radio Society offers [remote exams](#), free for students and youngsters. *There are apparently [many other remote exam options](#).*

Bonus - with an Amateur Radio license, you'll be [more attractive on dates](#) 😊

Closing the Channel

- In its mission to grow Amateur Radio and make it more relevant to society in the 2020s and beyond, Zero Retries is published via email and web, and is available to anyone at no cost. Zero Retries is proud *not to participate* in the Amateur Radio Publishing Industrial Complex!

- My ongoing Thanks to Tina Stroh KD7WSF for, well, *everything* and Bill Vodall W7NWP as *Zero Retries Instigator in Chief*.
- My ongoing Thanks to pseudostaffers [Dan Romanchik KB6NU](#) and [Jeff Davis KE9V](#) for continuing to spot, and write about “Zero Retries Interesting” type items, on their respective blogs, from Amateur Radio and beyond, that I don’t spot on my own.
- [Southgate Amateur Radio News](#) consistently surfaces “Zero Retries Interesting” stories.
- The [Substack email publishing platform](#) makes Zero Retries possible. I recommend it for publishing newsletters.

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All previous issues of Zero Retries are available without restriction (no paywalls). For some background, Zero Retries 0000 was the **Introduction Issue**. Zero Retries 0026 and Zero Retries 0027 were a **2021 Year End Review** of Zero Retries.

More bits from Steve Stroh N8GNJ:

- [SuperPacket blog](#) - *Discussing new generations of Amateur Radio Data Communications - beyond Packet Radio (a precursor to Zero Retries)*
- [N8GNJ blog](#) - *Amateur Radio Station N8GNJ and the mad science experiments at N8GNJ Labs - Bellingham, Washington, USA*

Thanks for reading!

Steve Stroh N8GNJ (He / Him)

These bits were handcrafted in beautiful Bellingham, Washington, USA

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